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AUTHOR Scott, Jean; Iloyd, Gerald
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ABSTRACT

Presented is an evaluation of a multi-media resource pack, available from British Petroleum Corporation, which details the discovery and extraction of North Sea oil. The evaluation presented includes three thrusts: (1) a determination of the areas where the packs were distributed; (2) personal interviews with teachers who had used the packs; and (3) a postal questionnaire mailed to 200 schools to collect information on use and success of the packs. (RE)

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AN EVALUATION OF THE USE BY TEACHERS
OF BRITISH PETROLEUM'S MULTI-MEDIA
RESOURCE PACK, A NORTH SEA ADVENTURE

Jean Scott, Gerald Lloyd

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Jean Scott, Gerald Lloyd

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1. i) The resource pack entitled 'A North Sea Adventure'

This multi-media resource pack is available from British Petroleum's Educational Service. It is shortly to be up-dated and revised. The pack contains details of the discovery and extraction of oil from beneath the North Sea. It is intended for use with children in the 8-14 age range. A list of the contents is included in Appendix I. It is important to realise that the pack specifies no particular teaching approach. (For each particular part of the pack several possible methods of usage are described.) Teachers are expected to decide for themselves how best to use the material of the pack using their knowledge of the facilities available to them and the abilities of the children in their classes.

ii) An evaluation

The evaluation of the teaching pack was carried out in 1978. The evaluation took three forms. Firstly, an inspection was made of the areas in which the packs had been distributed. Secondly, a number of personal interviews with teachers who had used the pack took place. Thirdly, a postal questionnaire was carried out to a sample of 200 schools.

2. Part I - an inspection of a sample of purchasers

A sample of approximately 700 names was supplied by Michael Benn and Associates Ltd. The 700 names were chosen at random from the complete list.

The addresses were inspected and the following results were obtained:

Distribution of schools by geographical areas

<u>Area</u>	<u>Number</u>
South-east	147 (excluding London)
North-east	90
Scotland	83
West-midlands	74
East-midlands	58
North-west	47
London	34
South-west	31
Wales	11
Northern Ireland	11

By institution (within the sample of approximately 700 packs)

1. Of this total, 313 were secondary schools and 273 were middle/junior schools.
2. Higher Education Institutions purchased a total of 44 packs with Colleges of Higher Education taking half this number.
 Teacher or L.E.A. resource-centres purchased 25 packs
 Education Advisers bought 8 packs
 Library or Museum Departments bought 9 packs
 British Forces Schools and other overseas
 Educational Institutions bought 7 packs
 Private individuals bought 47 packs

3. Specific institutions in the sample that bought the pack included: Arnold Publications; Halifax Building Society; Tricentral Ltd; Publications Department of Childrens Book Group; University Bookshops; Conservation Trust; Marine and Offshore Management, Gravesend; Iran Book Company; Foyles, Tutor Tape Ltd; STEP Management Services; North Border Company.

If this sample can be considered to be representative of the total sample of nearly 5000 packs sold, then the large number of packs bought by middle/primary schools is of considerable interest. Of course, the fact that the packs have been bought certainly does not necessarily mean that they are being used, nor does it give any indication of how they are being used.

3. Part II - personal interviews

A total of twelve interviews took place in the Bath area. This was an opportunity sample. The intention was that the interviews would be used as a pre-test for the postal questionnaire; a secondary intention was to be the collection of the information gained during the interviews. In fact, the draft questionnaire was only modified slightly as a result of the interviews but the information gained about the pack was of considerable value.

The interviews were face-to-face with the teachers who had used the pack. The interviews were based on the questions listed in the first draft of the questionnaire shown in Appendix II.

The information gained in these interviews was as follows:

i) Schools where interviews took place

An opportunity sample of twelve schools,

Secondary : co-educational comprehensives of the full
11-18 age range, one boys' comprehensive.

Primary : co-educational primary schools with both
5-11 and 7-11 age ranges.

Primary/Secondary : co-educational school for children 8-16
with learning difficulties.

In most cases the packs were bought close to the date of publication in 1974. It became evident during the investigation that it was an error not to undertake some sort of summative evaluation closer to the date of publication. A gap of several years between purchase and evaluation made it particularly difficult to contact the original purchaser. In many instances this was impossible by the postal questionnaire and probably resulted in the poor number of returns.

ii) The reasons for purchase included:

- a) to assist with the LAMP project (ASE based),
- b) for science lessons on oil,
- c) for the topic 'power and energy' in a secondary level
Economic Geography course,
- d) for the pursuit of an 'Energy' project in junior schools,
- e) for inclusion in a resource-based learning scheme.

iii) Sources of information

The sources of information that supplied the means of purchasing the packs was varied and included:

- a) BP Bulletin,
- b) Times Educational Supplement,
- c) A.S.E. project material,
- d) Teachers' World.

iv) Purchasers

The kit was usually bought by a specific department within the school, but on one occasion it had been bought by a Headmaster, and on others it had been bought personally by individual teachers. Part I of this evaluation has already indicated that about 7% of the packs in the sample investigated had been bought by individuals. The cost of the pack is now just under £8.00, when bought for school use. It could be that an increase in price to that approximately of the 'Alaskan Adventure' pack would put it out of the reach of these, perhaps the most enthusiastic, teachers.

No one had seen the pack before purchasing it.

v) Children taught by means of the pack

These schools showed a very wide range of children in both age and ability being taught by means of the pack.

Primary Schools

Mixed ability teaching took place with the 8-11 age range in these primary schools. The pack was used with these groups.

Secondary Schools

In the comprehensive schools the pack was used, or partly used, at several levels,

- a) 14-16 year olds in low ability level Mode III; Science
- b) 14-16 year olds C.S.E. Mode III; Chemistry, Science,
Geography

- c) 14-16 year olds G.C.E.; Chemistry
- d) Banded groups within the 11-13 age range; Science, and Geography.

It is interesting to note that there were no mixed-ability groupings in any of the secondary schools chosen for the opportunity sample for personal interviews.

The pack had been used extensively with levels 'b' and 'c' in the above list. There appeared to be a greater orientation towards geography than towards science. Where the pack had been purchased by a department to fit in specifically with a syllabus or scheme of work it was used more than once. This latter observation underlines the consideration that secondary school teachers are very syllabus (exam or school) oriented.

vi) Topics under which the pack has been used

Oil - science; Oil - geography; Organic chemistry; Fuels; Flame and Combustion; Oil, gas and the North Sea.

vii) Comments from teachers on each section of the pack

Teachers' Handbook

Generally, pupils were not given access to this item (it was missing from one pack). Where access was given, the material was considered to be too difficult. Teachers would have liked a pupil's handbook along the lines of the Teachers' Handbook, (see recommendations for up-dated version of North Sea Adventure). This, it is considered, would have helped children engaged on project work.

Geology-specialist teachers would have liked more photographs of real materials and even copies of actual seismic records.

Keeping up-to-date with developments is considered by teachers to be a hard task. "Regular, simple bulletins which could be added to the pack to keep it up-to-date" was suggested.

Two teachers used the handbook to make their own worksheets.

Good, clear maps and diagrams that can be photocopied were considered to be very valuable for secondary teachers. The map in the handbook was said to be particularly good. The information was considered to be sufficient.

Children and Oil

This booklet was particularly geared to junior level. It was only used in one instance and then enthusiastically. The layout was approved and the science work proved helpful. Worksheets were produced with the help of this book. One teacher would have liked help with the construction of rigs from meccano or balsa wood.

As an 'ideas' book, Children and Oil was appreciated. Time restricted development of some of the material at secondary level, but all teachers were keen to be given activity-ideas for all levels, especially those linked with interdisciplinary work.

Caveman Booklets

It must be remembered that Booklet 12, North Sea Adventure, is something of an anomaly, being of a different style to the others in this series. The response to the booklets was cool. 'Oil the Energy Maker' was considered to be of little value. Where the class as a unit used the booklets, 15 - 20 were needed. One teacher would have liked to have seen slide-pictures besides the commentary in 'North Sea Adventure'. One junior school

teacher did not like the humorous approach but he was an exception. As the "caveman image" is generally popular and is often used as an introduction to the subject of oil, it seems to have a lot of appeal when presented in a suitable manner. The Booklets were sometimes used for individual work and sometimes for a group's project work, after seeing the slides and listening to the tape as a complete class. The co-ordinated use of tape, slides and booklet did not take place. However, one junior school teacher was particularly appreciative of the simple language used in describing the refining of oil. But, it must be repeated that the general response was cool. (See the results of the postal questionnaire for conflicting opinion.)

Filmstrips

There was general approval for the contents of the filmstrips. The mixture of diagrams and photographs was considered to be good, especially when they could be related to the posters. All age-groups and ability-levels found them worthwhile.

The filmstrips were used with the tape recordings in several instances. In all cases, filmstrip usage was seen as a class activity, with occasional prior use by individuals or small groups. One teacher had made his own commentary.

The division into four sections was received with mixed approval.

At secondary level, the strips were either joined together or mounted individually as slides. Only one slide produced adverse comment: this was the plankton slide. It was considered that some indication of size of the plankton is required. The hand-held viewers received mixed approval. They were either too difficult to use or broke too easily.

Posters

There was general approval for all posters. All were displayed, except where there was a shortage of space. 'Planning the Search' was particularly recommended, including the use of its stickers. The scale comparison of a double-decker bus with a production rig was considered to be good. The comment was made by one teacher that "more detailed wallcharts would, however, be better, with photographs inset for those wishing to identify particular aspects of the rigs". One teacher was unhappy with the shading techniques and was looking for much more detail. The life-span and quality of the posters was considered to be good.

Model

The greatest use of the model, in this sample, appears to have been made by 15 year-olds working on the LAMP project. One or two children worked to each model. Generally, it was successful. One comment, however, was that some slots were too short for the tabs. Little colouring was done. Two secondary schools had no time for model making, (again this pre-occupation with syllabus). At junior level only two or three children would work at a time on the model. It was moderately successful but one teacher repeated the idea that models from metal or balsa would be better. (See results of postal questionnaire for differing evidence.)

Cassette

This seems to have been most successful at junior level, being used both for class-work and by individual children. The "Sea

Quest" commentary was the least used in this sample. This is a considerable surprise as it is one of the most expensive and complicated parts of the pack to produce. At junior level it did provide a focal point for creative writing. The 15 year-old groups were unable to concentrate long enough without some visual back up. (See recommendations for revised version of North Sea Adventure.)

A successful use of the Sea Quest commentary was observed with a top-band 13-year old Economic Geography class. Here, questions written by the teacher were asked about each stage of the commentary. The children wrote down the answers to the questions as the teacher stopped the tape at the appropriate place. From the resulting answers, the children reconstructed a visit to an oil rig. This seemed very successful with relatively able children.

Clarity of sound is considered to be vital in this sort of recording, otherwise children become frustrated. The cassette was not used at all in one secondary school and it was only in the case of the C.S.E. Mode III course were tapes and slides used together by children individually. Here, the children were doing an individual project.

Things to Do

This was used only in a limited way. Little information was available on the success of the crosswords although they were generally approved of. A suggestion was made for the inclusion of a guidance sheet from which individual teachers could work out their own questions, though to what was not clear. At junior level, work cards were created on 'Things to Do'. At secondary

level, some questions were used for homework but most teachers had their own questions directed at the particular field of study.

General Comments

As a whole the pack was well liked but its use as a complete co-ordinating unit was only witnessed in one case. This was at junior level. Here the strains and stresses of subject divisions and examinations were least evident and all round exploration of the subject was possible. At the secondary level, syllabus content put a restraint on the pack's full use but it was evident the geography-based work could make wider use of the pack than science-based work. Even at junior level, the geography rather than the science angle seemed to take precedence. Mixed-ability classes in secondary schools were not represented in this sample. Even in bands of limited mixed-ability the teaching potential of the pack for resource-based learning was not realised.

4. Part III - Postal questionnaire

Educational establishments would appear to be the only source of large scale sales. However, the number of individuals buying the pack, out of what would seem to be their own pocket, is high.

How many of these are in fact teachers or student teachers is now impossible to determine.

The questionnaire, see Appendix III, was posted with an accompanying letter to schools and to no other institutions, see Appendix IV.

The intention was to ascertain the methods by which the pack had been

used and the success of the individual parts. The opportunity was also taken of finding what other topics teachers would find valuable if covered by a similar pack.

i) The response

The response to the questionnaire was undoubtedly extremely disappointing. Out of 200 questionnaires distributed only 25 were returned. (A return of only 12.5% when a return of at least 30% was expected.) It could be argued that this is because the packs are bought without the teachers having seen a pack and then, on receipt, deciding not to use it. As a result, the teachers concerned are not prepared to comment on the pack. However, if this were the case, it would be expected that at least one of the 175 teachers would have replied to the questionnaire in a highly critical fashion. This did not occur and so the tentative conclusion is made that these teachers either were not sufficiently motivated by the accompanying letter to take the time and trouble to complete the questionnaire or were not contacted by the letter because of the delay between the time the pack was purchased and the time of the evaluation. (See earlier comment.)

ii) The responding schools

Of those returning the completed questionnaire, 11 were from junior/middle schools and 14 were from secondary schools. Even from this small number of replies it was possible to gain an indication that the assessment of teachers' resource materials must take place fairly rapidly after its distribution.

Some schools indicated that teachers had left with the pack and others had no record of the pack. In retrospect, it would have been better to use a non-random sample, only including those teachers who had recently purchased the pack. However, enough completed questionnaires were returned for a consensus to be made of the pack's usage.

Section A

i) The schools

13 co-educational comprehensives	(11-18)
1 girls' comprehensive	(11-18)
1 independent school	(4-18)
4 junior schools	(5-11)
4 junior schools	(7-11)
2 middle schools	(9-13)

ii) Reasons for purchase

Included for secondary schools:

- a) directly for work on North Sea Oil
- b) as support material for mixed-ability teaching
- c) for LAMP project work
- d) for design and technology projects
- e) for work on energy resources-supplementing courses on fuels
- f) as an aid to an integrated science course
- g) for Nuffield Combined Science years 1 and 2
- h) to add interest to a first-year syllabus.

The secondary schools saw the pack as valuable for both examination and non-examination work.

Included for primary schools:

a) project work with a variety of titles:

Oil, North Sea Oil; Energy Resources;
Resources from the Sea; Energy Studies;
Science project

b) as an addition to school resources and aids.

iii) Sources of information for purchase

The sources of information that supplied the means of purchasing the pack included: BP Newsletter and pamphlets, Direct enquiries with BP; Shell News; School Science Review; A.S.E. Exhibition; Times Educational Supplement; Schools Information Centre Bulletin.

Only two schools had seen the pack before buying.

iv) Departments purchasing pack

The departments within the schools which paid for the packs were, for secondary schools, predomintly science departments, with some geography departments and just one design and technology department. A resource-centre in a school had bought one pack. Within junior schools those teachers in charge of environmental science or social studies bought the pack.

v) Subject/age-range/ability-level using pack in secondary schools

<u>Age-range</u>	<u>Subject</u>	<u>Ability-level</u>
11-12	geography	mixed ability
11-12	science	mixed ability
11-13	design and technology	mixed ability
12-13	science	mixed ability

<u>Age-range</u>	<u>Subject</u>	<u>Ability-level</u>
13-15	geography	non-examination
13-14	integrated science	C.S.E.
13-14	science	remedial group
14	chemistry	Scottish Cert. Ed.
14	chemistry	non-certificate
14	science	low ability
13-16	science	remedial
14-16	integrated science	slow learning
14-15	geography	slow learning
14-15	science	bottom stream
14-16	geography	G.C.E.
14-16	chemistry	G.C.E.

Within the secondary schools the whole age-range up to sixteen years used the pack, with science being the predominant subject. Mixed-ability and low-ability groups appear to have made the greatest use of the pack. The number of times each individual pack has been used within the secondary schools varied. From 3, 4 and 5 times, up to 14, 16 and 18 occasions were described.

vi) Subject/age-range/ability-level in junior schools

In the junior/middle schools the age range was 8-13. The subjects taught by means of the pack tended to be more general than in secondary schools but included environmental studies and social studies. There, mixed ability groups predominated. There were two instances of only the more able groups using the pack.

vii) Topics under which the pack has been used

The topic, unit or section of the syllabus for which the pack was used were as follows:

Secondary Schools

- a) fuels section from the LAMP project
- b) fuels section from an integrated science course
- c) distillation of Oil, Nuffield Combined Science
- d) S.C.E. O-grade examination
- e) plastics, fuels and energy
- f) North Sea oil, gas and energy
- g) energy resources
- h) purification of substances
- i) the British Isles

Junior schools

- a) energy
- b) sources of energy - oil
- c) travel and communication - resources
- d) oil

Section B

The responses supplied by schools to Part 1 and Part 2 of the questionnaire are summarised in the following tables.

It is not practical to attempt to convert all of these scores into generalisations as these would be too numerous. It is considered more practicable for readers to look at the tables and note for themselves the information that they require.

However, it is important to underline that the sample was small, just twenty-five schools. Nevertheless, much valuable information can be extracted from the results and some very broad, tentative generalisations can be drawn. These are included after the tables.

i) Responses to Section B - question 1 (See Appendix IV)

A summary of the age-groups with which the various parts of the pack have been used and whether these groups were either formed by streaming or mixed-ability is given in the table. The pack was devised for children in the eight to fourteen age range. However, an attempt was made to discover whether it was being used by children outside this age range.

Responses *

Material	Grouping	Age Range					Totals
		Below 8	8 → 10	10 → 12	12 → 14	Above 14	
Teacher's Handbook	Mixed	0	2	4	1	0	7
	Streamed	0	0	3	1	3	7
Children and Oil	Mixed	0	2	7	1	0	10
	Streamed	0	0	2	1	1	4
Caveman 12 (Guide to filmstrip)	Mixed	0	3	8	2	0	13
	Streamed	0	0	2	4	4	10
Caveman 11 (Oil the Energy Maker)	Mixed	0	3	8	2	0	13
	Streamed	0	0	1	4	4	9
Filmstrips	Mixed	0	3	8	1	1	13
	Streamed	0	1	2	4	5	12
Posters	Mixed	0	3	8	3	0	14
	Streamed	0	1	3	5	7	16
Model	Mixed	0	3	6	3	0	12
	Streamed	0	0	3	3	3	9
Cassette A (Sea Quest)	Mixed	0	3	6	1	0	10
	Streamed	0	0	3	4	5	12
Cassette B (Commentary)	Mixed	0	2	6	1	0	9
	Streamed	0	0	2	2	4	8
Things to Do	Mixed	0	2	5	1	0	8
	Streamed	0	0	2	2	2	6
Totals		0	28	89	46	39	202

* Each number in the matrix gives the number of schools using the materials.

ii) Observations

1. The pack was not used in this sample of schools below the age-range recommended (8-14) but was used to some extent in an age-range above that recommended.
2. The need for a flexible method of using the pack was supported by it being evident that the proportion of children using the pack in streamed classes was about equal to that in mixed-ability classes.
3. No part of the pack was significantly under-used. The main use was in the 10-12 age range. This spans the normal secondary/primary boundary.
4. An overall order of 'uses made' for the pack based on this data is not particularly valid for comparing the relative worths of parts of the pack as certain parts have been devised for specific age-ranges. However the 'number' of uses does give an indication of the willingness of teachers to use particular teaching aids. The order of "number of uses" is:

posters

filmstrips

booklet 12

booklet 11

cassette A

model

cassette B

Teacher's handbook

Children and oil

Things to do

5. More specific information is best acquired by readers inspecting the table directly. Care must be taken in making generalisations. Of course, the number of groups that use the pack is no indication of its success in use.

iii) Responses to Section B - question 2 (See Appendix IV)

The system of grading used was:

1. Very successful
2. Moderately successful
3. Moderately unsuccessful
4. Very unsuccessful

The mean grading is given

Responses *

Material	Age Range				Overall mean
	8 → 10	10 → 12	12 → 14	above 14	
Teacher's Handbook	2.00	1.67	1.33	2.30	(differing numbers in each unit) 1.79
Children and Oil	2.00	1.58	2.67	not graded	1.92
Caveman 12 (Guide to filmstrip)	2.00	1.67	2.00	2.00	1.86
Caveman 11 (Oil the Energy Maker)	2.00	1.88	2.25	2.00	1.94
Filmstrips	1.00	1.60	1.33	1.80	1.50
Posters	1.67	1.25	1.25	1.67	1.39
Model	1.67	1.40	2.20	2.00	1.74
Cassette A (Sea Quest)	1.67	1.50	2.30	2.75	2.10
Cassette B (Commentary)	1.50	1.67	1.80	2.00	1.75
Things to Do	2.00	1.75	1.67	2.00	1.78

* Each number in the matrix is a mean of the scores given to the material by schools. The lower the mean, the greater the success of the material.

Range 1.00 → 4.00.

iv) Observations

Again, valid generalisations are difficult to make. The lower the score, the better the teachers consider the success of the material.

1. One-hundred and seventy-three responses in total were obtained for the various parts of the pack from the twenty-five schools. They were as follows:

Grade 1 - fifty-nine responses

Grade 2 - ninety-eight responses

Grade 3 - fifteen responses

Grade 4 - one response (for the use of Cassette A - Sea Quest in above 14 age range

2. The material can be put in order of success of use using the means as a measure.

- (a) The order would be in all age ranges:

posters

filmstrips

model

cassette B

Things to Do

Teacher's Handbook

Booklet 12

Children and Oil

Booklet 11

cassette A

- (b) The most successful in specific age ranges:

Age-range	Most successful
8 - 10	filmstrip, cassette B
10 - 12	posters, model
12 - 14	posters, teachers' handbook, filmstrip
above 14	posters, filmstrip

3. Again, more specific information is best acquired by readers inspecting the table directly.

Section C

- i) Comments on each section of the pack.

The Teachers' Handbook

In the secondary schools about one-quarter of teachers allowed the handbook to be used by their pupils. In the junior schools about one-half of the pupils had access to the handbook. The overall opinion was that a pupil handbook would have been valuable. The information which the handbook provided was sufficient for the needs of most teachers. Three had more than that needed and only two did not have the required information. In the latter two cases, these were junior school teachers, one found the information too technical and the other wanted more information on the uses of oil. In one case, the handbook was considered inappropriate to the needs of a remedial course. There were several cases of worksheets being constructed by the teachers from the handbook. The booklet was generally appreciated but there was a desire expressed for more detailed maps on oil production and processing centres. (See recommendations for

revised version of North Sea Adventure.)

Children and Oil

Half the secondary schools did not use this book. The remainder found it useful, well related to everyday life, and useful for project preparation. One school found it well written and useful for lower ability ranges. The junior/middle schools were enthusiastic and children actually used the booklet in working on their own projects. It proved useful in formulating lesson plans for some teachers but one teacher thought it was a rather 'glossy public relations image' and requested more basic help to achieve the ends indicated by the booklet. Only one junior school, in this sample, did not make use of the booklet. (See note in Section B.)

Caveman Booklets

These booklets appear to have been used mainly for project work and not always in conjunction with the filmstrips. There were four cases where the booklets were modified, two secondary and two junior schools. At secondary and junior levels, the booklets were used for both group and individual work. The overall opinion of the booklets was favourable (see results of personal interviews for conflicting opinion) with comments such as useful, stimulating, attractive, and attention focusing. But it was thought that when used with the younger age-range they needed a lot of teacher comment to help with the technical side. Brighter, junior children could just use them but the vocabulary was slightly above average for use in mixed ability classes. The older age-range reacted against the "caveman" in one instance but then came to terms with the symbol. One

teacher found the cartoons a useful stimulus. One school needed more booklets. (See notes in Section B.)

Filmstrips

Secondary Schools

In the secondary school, a class-showing was the method generally used. There was only small-group and individual use in a few cases: one instance involved group work with booklets as a direct result of mixed-ability classes. The overall comment from the secondary schools was good. The strips were successfully used with a wide age-range and were equally satisfactory with examination and non-examination pupils.

Slides were considered more useful for group work and one teacher had made his own slides so that discussion could be focused on individual pictures. A comment from a girl's comprehensive was 'not entertaining enough for the less-able and not detailed enough for the able groups'. This school required more information on the fractional distillation of oil and its products.

One school would have liked a continuous strip and claimed the strips scratched too easily. In one school, the teacher found the slides very successful and easy to use for group work, especially with the poorer ability levels. Here they "were the right length and the pupils got a lot out of them". However, he considered that they didn't stretch the brighter children and a longer film was necessary for use in a class lesson.

Junior Schools

The junior schools did much more group and individual work. Again, some teachers made the strips into slides with accompanying notes plus the tape in order that children could do their own topic-tasks.

One teacher found individual use most successful with all abilities, but the strips were too fragile for the rigours of a large class. Careful, structured prior presentations by the teacher were considered essential to ensure success of group and individual work.

Porters

The posters received overall highly favourable comment. They were used as wall displays, attention focusers, for class discussion, for drawing, for information, and as a source of Art/Craft ideas. They were used in class, group and individual work. No poster was singled out for its good or bad qualities. Comment included: eye-catching, with the right balance between design and information; good and informative for visual display; gave the right atmosphere; the design was clear and uncomplicated if lacking in visual excitement; good design and the right size.

Model

The number of children able to work successfully on the model was considered to be generally from two to four. One teacher thought ten, and two thought that up to six was a possibility.

It was quite extensively used. (See Section B.) Only one junior school and three secondary schools did not use the model. The junior schools thought the age-range best suited for making the model should be 10-12 years, while the secondary schools thought it suitable for 11-12 year olds but also 13-14 year olds of low-ability. One case of 15+ pupils using the model brought the following teacher comment on model making 'model-making must be an out-of-school activity or involve every children and be brief. It is time-wasting unless interest can be generated by a

short period of model making'.

Other comments included that the model was difficult to cut out and flimsy. A more robust plastics model was suggested at a cost of about £4.00. Instructions were considered inappropriate for remedial groups but this teacher thought schools should design their own. One teacher saw the task as useful for improving dexterity and encouraging co-operation. Good colouring brought the model to life in one case, while another found water-colour resulted in distortion and any other non-water-based colouring system did not create a realistic effect. More than one copy of the model was desired but a tracing system was suggested so that any number of models could be made from the one master. This is certainly noteworthy. Generally, the model was moderately successful and appears to have been enjoyed by the children. It was certainly more widely used than anticipated by the personal interviews.

Cassette

The Sea Quest commentary was used in most cases with the secondary schools and in all cases in junior schools. It has been used as a starting point or introduction to the topic but the response was not good in all cases. Class-listening followed by discussion was the general formula for use but two cases of a follow-up with descriptive written work were described as being successful. Audibility is considered a problem, especially for younger children. One teacher thought use of headphones might have been more successful. Creative writing from one junior school was very successful.

The filmstrip commentary was used only marginally less than the

Sea Quest commentary. Four secondary and three junior schools did not use it. There were only two cases where the filmstrip and cassette were used together for class teaching. Two secondary schools used the tape for individual and group-work where the need arose to answer specific questions. They rewound and listened to sections of the tape as was necessary. The response generally was good. Discussion was promoted by the tape. Only one junior school used the tape in conjunction with the booklet.

Things to Do

In the secondary schools, seven made no use of this material and five used some part of it. The crosswords were successful and enjoyed though the low-ability children found them difficult. One teacher gave key letters and with this addition the crosswords proved more useful. The questions were not widely used.

In the junior schools, four used the material and four made no use of it. The crosswords were considered to be good but difficult and suitable for top-ability children only. The questions brought the comments: rather limited; produced plenty of work; for top-ability only.

General Comments

General comments about the pack and those of a general nature were as follows:

practical work needed with the uses of oil as a fuel and its derivatives;

of general value to the school but needs to be kept up-to-date;

a desire to see more resources aimed at 'O' level and C.S.E. level;

more filmstrips and booklets needed for a full class;
 samples of plastics and booklets of worksheets needed;
 the kit was useful and informative and was good back-up material;
 a greater variety of booklets/worksheets directed at specific
 age-ranges;
 should not aim at too wide an ability and age-range;
 worksheets as a spirit master, so they can be used time and time
 again;
 tracing of the model instead of a cut-out, so it can be used
 again;
 more concrete suggestions for follow-up in areas of science and
 creative written work;
 a longer filmstrip to draw everything together;
 made more resistant to wear;
 vary content and vocabulary according to age-range, particularly
 with work booklets.

ii) Suggestions for further packs

From secondary schools
 petrochemicals industries
 motorways
 ocean-going transport
 simple farming patterns in the third world
 canals, inland waterways and the working of locks
 organisation of the E.E.C.
 astronomy
 earth science
 the human body

food science

detergents

plastics

weather

industrial topics generally,

coal and coal mining

industrial manufacture of household chemicals

pollution

other natural resources

solar energy

From junior/middle schools

B.P. as a multi-national company - products, world locations,
and influence

iron and steel

North Sea gas

the story of petrol

pollution

exploring the urban environment

coal

home chemicals, e.g. salt, sugar

energy and transport

modern transport - a particular journey

the age of steam

food production

communications

land resources, coal, agriculture, industry

plastics

the motor industry

major inventions of C.19 and C.20.

5. Some general conclusions and recommendations

1. There is often a problem of obtaining a satisfactory sample for analysis when an evaluation of this type is being carried out. The delay between the evaluation and the distribution of the material was, in this instance, often far too long for a successful contact to be made with the recipient of the material. Face-to-face interviews produced valuable information but this technique is both time consuming and expensive to carry out.

An evaluation would be more valid if it were to be made closer to the time of distribution. In the future, an automatic follow-up with some form of questionnaire, at a specified time interval after the material has been distributed, would be more efficient; the questionnaire could take a similar form to that used in this study. If this type of follow-up is impossible, the next best method would be to include a pro-forma of the questionnaire with the material itself. The problem of teachers' general unwillingness to return these questionnaires could be reduced by supplying some sort of 'incentive' for returning the questionnaire, but this could prove to be expensive.

2. That a wide age-range of children is being taught using the pack is now evident. A significant proportion of the use is in primary schools. Also, it does seem that the idea of making available a collection of teaching resources and allowing teachers to decide for themselves what is most suitable for their children is working efficiently. In practice, nothing within the pack is being used significantly less than any other part. Each part of the pack is being used in a variety of ways.

3. Much use is made of the pack in the teaching of geography and allied subjects. Perhaps, more emphasis should be placed upon bringing the pack to the notice of teachers of these subjects.
4. Secondary schools tend to use the pack to fit into their examination or school syllabus. Primary schools tend to fit their school's teaching schemes around the pack and use the packs in their entirety. So, the element of continuity built into the pack is not essential for the secondary school, but is very important for the primary school. The implications for the production of future packs is that those for secondary schools must tie in with present syllabuses but this is not necessary for primary schools.
5. Careful consideration must be given to the cost of these packs. It could be that a considerable increase will put them out of the reach of many schools and out of the reach of those teachers that buy the pack out of their own pockets. Evidently, if this happens then the intended outcomes of producing material of this sort will be unfulfilled.
6. The information gained by this study will be invaluable in up-dating and redesigning packs so that they will be of maximum potential use for teaching children some detail of our technological achievements.

Appendix I

A NORTH SEA ADVENTURE

Contents

One letter of introduction

One copy of Children and Oil

One copy of A North Sea Adventure - Teachers' Handbook

Fifteen copies of A North Sea Adventure - "Caveman" booklet No. 12

Two copies of Oil the Energy Maker - "Caveman" booklet No. 11

Four Filmstrips:- Origins

Discovery

People

Production

One Audio Cassette

Six posters:- Planning the Search (with Oil Discovery labels)

Exploring beneath the Sea

Drilling for Production

Piping Ashore

Supplying the Future

How Do We Use Oil? - in the Countryside

One Cut-Out Model

One leaflet Things to Do

Four Filmstrip Viewers

Appendix II

Original DraftBATH UNIVERSITY SCHOOL OF EDUCATIONNorth Sea Adventure - EvaluationSection A

1. Type of Institution, e.g. Comprehensive, Grammar, Independent, Middle School

2. Age Range of Institution _____
3. When was the kit purchased? _____
4. Why was the kit purchased? _____

5. Source of information concerning kit, e.g. Times Ed. Supp.

6. Had kit been seen before purchase? _____
7. Who purchased kit? i.e. which department

8. Age, subject and ability range of groups with whom the kit has been used
 1. _____
 2. _____
 3. _____
9. How many times has the kit been used since purchase? _____

Section B

1. Which part of the kit has been used with which age group?
Write M if a mixed ability group and S if a streamed group

	below 8	8-10	10-12	12-14	above 14
<u>Part of Kit</u>					
Teacher's Handbook					
Children and Oil					
Caveman Booklet 12 (Guide to filmstrips)					
Caveman Booklet 11 (Oil the energy maker)					
Filmstrips					
Posters					
Cut out Model					
Cassette Side A (Sea Quest)					
Cassette Side B (Booklet Commentary)					
'Things to do' sheet					

2. Using the following scale indicate the success of the various parts of the kit

1. - very successful
2. - mod. successful
3. - mod. unsuccessful
4. - very unsuccessful

	below 8	8-10	10-12	12-14	above 14
<u>Part of Kit</u>					
Teacher's Handbook					
Children and Oil					
Caveman Booklet 12					
Caveman Booklet 11					
Filmstrips					
Posters					
Cut out Model					
Cassette Side A (Sea Quest)					
Cassette Side B (Booklet Commentary)					
'Things to Do' sheet					

(Interview - give some indication of reasons for success and non-success)

3. Place a tick in the appropriate box.

	Consumed	Insufficient Nos.	Inclusion Worthless
Teacher's Handbook			
Children and Oil			
Caveman Booklet 12			
Caveman Booklet 11			
Filmstrips			
Posters 1			
2			
3			
4			
5			
6			
Cut-out Model			
Cassette Side A			
Cassette Side B			
'Things to do' sheet			

Please make comments and suggestions for other inclusions:-

Section C

1. Teacher's Handbook

a) Did the pupils have access to this? _____

b) Would a pupil handbook have been useful? _____

c) Was the information provided

(i) sufficient for needs _____

(ii) insufficient _____

(iii) more than you needed _____

Comments? _____

d) Did you use this booklet to help you construct worksheets?

2. Children and Oil

a) Did you find this book useful? Comments please.

3. Caveman Booklets

a) Did you have to modify the booklets? _____

b) Were they used for individual work or group work or both

Comments:-

4. Filmstrips

How were these used? e.g. group, class or individual work.
Please comment on the success or failure with various ages and abilities.

5. Posters

Comment on how they were used.

6. Model

- Comment on (a) degree of difficulty in relation to age and ability
(b) advantages and disadvantages of model making
(c) number of children who can successfully work together
on this particular model.

7. Cassette

- a) In what context was the cassette used? _____

b) What sort of response did it receive? _____

8. 'Things to do' sheets

(i) Did you make use of this sheet? _____

(ii) If so please comment on

a) Crosswords _____

b) Questions _____

9. Please make any further comments, and suggestions for other inclusions in the kit

10. On what other subjects would you like to see kits produced?

Appendix III

UNIVERSITY OF BATH

Claverton Down School of Education
BATH BA2 7AY

Telephone Bath 61244

Dear Teacher,

From our records we have discovered that you purchased a BP North Sea Adventure pack. As you know, this kit has been available for some time and its use is now widespread. Preliminary research has indicated that the kit is, as expected, used in many different ways, with different age groups of children and with different ability ranges.

We are anxious to determine the merits and demerits of the pack and to discover what teachers now require.

Your help in this matter, by completion of this questionnaire, and its return in the enclosed, pre-paid envelope, would be greatly appreciated.

Yours sincerely,

GERALD LLOYD
Lecturer in Education

Appendix IV

BATH UNIVERSITY SCHOOL OF EDUCATIONNorth Sea Adventure - EvaluationSection A

1. Type of Institution, e.g. Comprehensive, Grammar, Independent, Middle School

2. Age Range of Institution _____
3. When was the kit purchased? _____
4. Why was the kit purchased? _____

5. Source of information concerning kit, e.g. Times Ed. Supp.

6. Had the kit been seen before purchase? _____
7. Which department purchased the kit? _____
8. Age, subject and ability range of groups with whom the kit has been used
 1. _____
 2. _____
 3. _____
9. Approximately how many times has the kit been used since purchase? _____
10. Topic, unit or section of syllabus where kit was used _____

Section B

1. Which part of the kit has been used with which age group?
Write M if a mixed ability group and S if a streamed or set group

Age Range

	below 8	8-10	10-12	12-14	above 14
<u>Part of Kit</u>					
Teacher's Handbook					
Children and Oil					
Caveman Booklet 12 (Guide to film strips)					
Caveman Booklet 11 (Oil the energy maker)					
Filmstrips					
Posters					
Cut out Model					
Cassette Side A (Sea Quest)					
Cassette Side B (Booklet Commentary)					
Things to do' sheet					

2. Using the following scale indicate the success of the various parts of the kit

1. - very successful
2. - moderately successful
3. - moderately unsuccessful
4. - very unsuccessful

	<u>Age Range</u>				
	below 8	8-10	10-12	12-14	above 14
<u>Part of Kit</u>					
Teacher's Handbook					
Children and Oil					
Caveman Booklet 12 (Guide to filmstrips)					
Caveman Booklet 11 (Oil the energy maker)					
Filmstrips					
Posters					
Cut out Model					
Cassette Side A (Sea Quest)					
Cassette Side B (Booklet Commentary)					
'Things to do' sheet					

Section C

1. Teacher's Handbook

- a) Did the pupils have access to this? _____
- b) Would a pupil handbook have been useful? _____
- c) Was the information provided
- (i) sufficient for needs? _____
- (ii) insufficient for needs? _____
- (iii) more than you needed? _____

Comments _____

- d) Did you use this booklet to help you construct worksheets?
- _____

2. Children and Oil

Did you find this book useful? Comments please _____

3. Caveman Booklets

- a) Did you have to modify the booklets? _____
- b) Were they used for individual work, group work or both
- _____

Comments _____

4. Filmstrips

How were these used? e.g. group, class or individual work.
Please comment on the success or failure with various ages and abilities

5. Posters

Please describe how you used the posters and comment on the design

6. Model

(i) How many children can successfully work together on this model?

(ii) In your opinion which age and ability range(s) is the model most suitable for?

Please comment on any problems encountered and give your opinions on the merits of model making

7. Cassette

(i) In what context was the cassette used?

Side A - A visit to Sea Quest

Side B - Filmstrip Commentary

(ii) What sort of response did it receive?

Side A

Side B

8. 'Things to do' sheets

(i) Did you make use of this sheet? _____

(ii) If so please comment on

a) Crosswords

b) Questions

9. Please make any further comments, and suggestions for other inclusions in the kit

10. On what other subjects would you like to see kits produced?

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